Ranch on the Clear Fork

E. M. Schiwetz

The Humble Way

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White plume rises above the Gulf of Mexico as exploration crew sets off a seismic shot in the continuing costly search for oil.

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A Look at The Humble Company Of Today and Tomorrow

By Morgan J. Davis, *President*

LAST June, Humble Oil & Refining Company observed its 40th anniversary. That means we have now arrived at the age at which, according to some, life is supposed to begin. If that be true, then few enterprises have ever had a more favorable position from which to start.

As of today, for example, the shareholders' investment in the Company amounts to more than $1,335,000,000, or almost exactly three times what it was at the end of World War II. Our employees—the men and women who make up the backbone of the Company—number more than 19,000, or some 3000 more than we had at the end of 1945. We now have more than 13,000 producing wells in 595 separate fields, and our reserves of both oil and gas are at an all-time high. And while the Company continues to derive the bulk of its earnings from the production of oil, it is fast becoming more diversified. Our refining activities are particularly growing in importance, especially in view of the long-range outlook for petrochemicals.

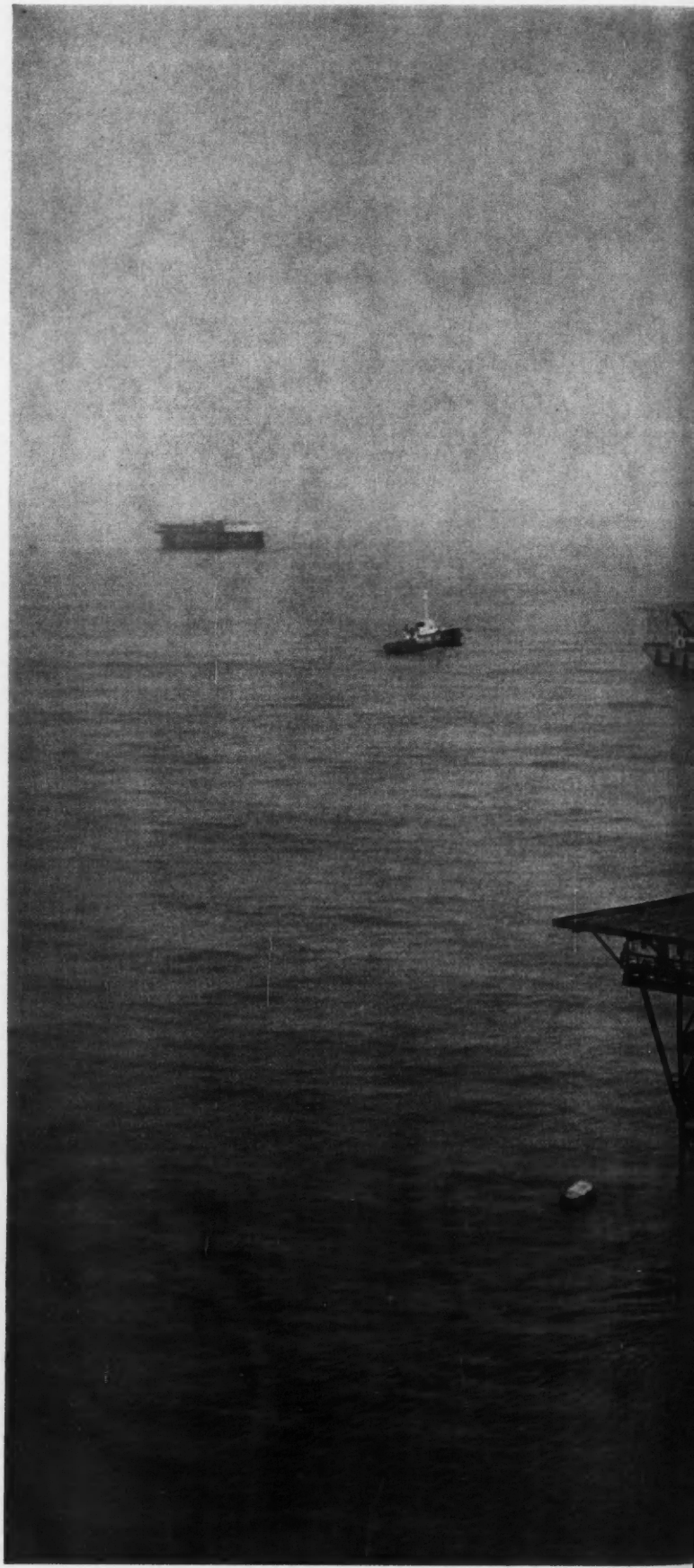
This article is based on a talk Mr. Davis made before the Central Cost Control Committee at Baytown Refinery on January 7, 1958.

At the same time, however, this bright picture has its more somber side. The general economy has been showing signs of deterioration for several months now—not enough to cause great alarm, but certainly enough to give reason for some careful stock-taking. The domestic petroleum industry, I might add, has been feeling the impact of an economic squeeze for an even longer period.

Not only has demand failed to measure up to expectations, but our entire business effort has been accompanied, year by year, by rising costs. Some of these increased costs are attributable to inflation, some to other factors. For example, we have had to carry the search for oil into new and less accessible areas. To find new oil, we have had to drill to greater average depths. In order to maintain our position, we have had to develop a producing capacity greatly in excess of our current needs, and the cost of carrying this reserve producing capacity is high. These problems have been made even more complex by the upsurge in oil imports.

The burden of carrying today's spare producing capacity

"We have had to carry the search for oil into new and less accessible places."



Millions of dollars of capital investment are represented in this view of part of Humble's offshore operations near Grand Isle, Louisiana.

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has fallen particularly hard upon Texas. For the last four months, the number of our producing days has been at the record low of 12 days a month. Since Humble has such a large part of its production in Texas, we are affected far more than most large companies, and we now find ourselves producing at only half of the maximum efficient rate of our wells.

Final figures on Humble's 1957 operations are not yet available, but some of the results for the first 11 months will give you an idea of our present situation.

Through November, our net crude oil production—the primary source of our earnings—averaged 363,000 barrels a day, a drop of 8000 barrels a day from the year before, (The November-December rate was only about 328,000 barrels a day.) Our dry hole costs, on the other hand, increased to more than 42 per cent of our drilling expenditures (a year-end figure), as compared with 38 per cent in 1956. Trunk line deliveries totaled 681,000 barrels a day, a drop of 19,000 barrels a day from the previous year. Refinery runs averaged 236,000 barrels a day, or 26,000 barrels a day under those of a year ago. Output from our butyl and butadiene plants also declined sharply.

FORTUNATELY, earnings from our sales of natural gas and paraxylene both registered healthy increases in 1957. Our gasoline sales also showed a slight increase, but earnings from this source were considerably reduced by a series of price wars.

Taking all these factors into account, it now appears that our earnings for 1957 will total out somewhat below the $179 million we made in 1956. This, of course, adds up to a rather disappointing year, especially when you relate our 1957 earnings to the increase in the size of our investment. Ideally, our earnings should keep pace with the increase in our investment. Over the past 10 years, however, they have lagged far behind.

But Humble, as you well know, has always tried to plan its operations for the long pull. With America's population in a steady uptrend, with the demand for oil and gas expected to increase dramatically within the next 10 years, Humble is continuing to expand.

In exploration and production, for example, there has been a widespread extension in recent years in our operating area. We now carry on the

"In the far north, in the Territory of Alaska, we are engaged in another venture involving high risks and high costs."

Helicopters and the nearby sea offer only means of transporting men and materials to this isolated drilling site on the Alaska Peninsula. This is the Humble-Shell Bear Creek No. 1 wildcat test.

search for oil in 11 states, one territory, and on what sometimes seems to be the no man's land of the Continental Shelf.

Our operations on the Continental Shelf off the coast of Louisiana are particularly significant. Since we brought in our first well there in 1948, we have raised the number of our offshore producers to 96. We have about 165,000 acres under lease off the Louisiana coast, or some 10 per cent of the amount held by the entire industry.

This offshore work involves tremendous costs. Humble has already spent $32 million there on leases alone. This, plus the other costs and expenses of offshore exploration, drilling, and production, add up to the staggering debit total of $196 million. The area has shown a very satisfactory ratio of successful wells and good reservoir conditions, but at the same time it has pointed up just how long it takes to develop oil fields. In spite of 11 years of effort, in spite of an industry investment totaling hundreds of millions of dollars, the daily average production of offshore Louisiana is currently only about 96,000 barrels. That's enough to supply the nation's consumers for about 15 minutes.

IF MARKETS were available, offshore Louisiana could probably produce twice as much as it is now producing, but even this would still be a very small percentage of the country's daily requirements. Looking to the future, we need someday to be able to produce these large offshore reserves at a considerably increased rate if unit producing costs, which are now alarmingly high, are to be reduced to a reasonable figure.

In the far north, in the Territory of Alaska, we are engaged in another venture involving high risks and high costs. Last year, as you may have read, we decided to join forces with Shell Oil Company on a wildcat venture on the Alaska Peninsula. By agreeing to drill three wells at our expense, we were able to acquire a half interest in three big blocks of Shell's leases. The first of these wells is now being drilled about 350 miles southwest of Anchorage.

Our expanded exploration and development program has resulted in a greatly increased reserve producing capacity. Back in 1948, we were producing about 411,000 barrels a day (total operated production), and we had practically no reserve producing capacity. Today, because of cutbacks in domestic production, we are producing a total of only 357,000 barrels a day from our operated properties, and our reserve producing capacity on the same basis has soared to 368,000 barrels a day. In other words, we could, if given the allowables and the market, produce 725,000 barrels a day from wells already drilled without exceeding our maximum efficient rates of production.

The supply situation being what it is, we now expect to drill fewer wildcat and development wells in 1958 than we did last year. You can understand our decision on this point when you consider that since 1948, Humble has plowed nearly $1 billion into its drilling activities alone. Last year, however, our net production of crude and condensate averaged about 8000 barrels a day *less* than it did in 1948. Because of proration restrictions and cutbacks due to imports and decreased demand, we have not been able to increase our production along with the increase in our investment.

HUMBLE is making great strides as far as natural gas is concerned. Since the end of World War II, we have spent some $67 million on gas processing plants and conservation projects. This summer, however, we plan to start work on a new installation which will be much larger than anything we have built in the past—the King Ranch Gas Plant. This will be the largest gas processing and cycling plant in America, with a capacity of about 750 million cubic feet of gas a day. In conjunction with the building of this plant, we also plan to lay a 30-inch gas transmission line from Southwest Texas to the Houston area. The total project will cost about $77 million and will take two years to complete. We also have one or two major gas projects in the formative stage, but these are not yet ready to be announced.

Baytown Refinery is another area in which there have been, and in which there will continue to be, some major developments. Since the time when Baytown was being built, refining has always received a great deal of careful attention from the Company's executives. The present directors and officers of the Company have a keen interest in refining operations, and they share a feeling of pride over the remarkable achievements of the refinery's operating and technical personnel.

Importance of refining operations is shown by the tremendous amount of capital we have put into Baytown since World War II. At the end of 1945, our gross capital investment at Baytown was $95 million. Today, it is about $300 million. Last year, we spent nearly $48 million, or 20 per cent of our capital budget, at Baytown. This year, we plan to spend an additional $32 million, or about 15 per cent of our capital budget.

THE emphasis at Baytown is being placed on petrochemical expansion. There is good reason for this. The petrochemical industry is one of the fastest growing in the country, and Baytown is in an excellent position to capture a fair share of the market. Over the past 10 years that market has about trebled in size. Some 26 per cent of all chemicals now being produced in the United States, with a value of more than $3 billion per annum, are produced or derived from natural gas and oil. Current production of

petrochemicals is at the rate of about 38 billion pounds a year.

Let's review briefly the details of our planned chemical capital program at Baytown. We are enlarging the paraxylene plant. Expansion of the butadiene plant was finished last year, and added capacity of the butyl plant is scheduled for completion this year. Our new plant for the production of benzene has just been put on stream. The new ethylene unit will go on stream about the middle of the year. We are also turning out propylene polymers for the detergent industry. Even those of us not intimately acquainted with refining through experience, are excited by the new petrochemical program and we are glad to encourage further sound ventures that give promise of increased participation in these profitable new fields.

Looking beyond 1958, we visualize plenty of opportunity for continued progress. We enjoy a favorable position with respect to our reserves of oil and gas. We can foresee, in future years, a substantial increase in requirements for our raw materials and refined products. We are preparing for the future by making sizeable investments in all major phases of our operations. The fact remains, however, that the present and near future seems, by contrast, gloomy and full of problems.

Some of these problems are of a political nature. There isn't space here to go into these in any detail, but suffice it to say that our critics in Washington are stepping up their attacks on such things as percentage depletion, and upon the industry's alleged high prices and exorbitant profits. The fact of the matter, of course, is that wholesale prices of petroleum and products have gone up considerably less than those of many other commodities. Furthermore, in spite of the great risks involved, the rate of return on invested capital is lower in the petroleum industry than it is in several other industries, including chemicals, iron and steel, automobiles, and aircraft. It is also less than the average of all manufacturing industry.

IT IS also very much to be regretted, I think, that our own bargaining agencies sometimes oppose Humble and our industry on some of these vital political issues such as percentage depletion. Since the bargaining agencies' own welfare is directly involved, one wonders why they take this stand. The probable reason is poor communications and a lack of understanding. In some other industries—in coal and textiles, for instance—the unions aggressively fight on management's side against restrictive legislation that might be harmful to their industries.

In the final analysis, however, our most immediate problem is an economic one. These periods of financial stress are never a pleasant experience, but they usually have some good side effects. During them, we take a careful

look at ourselves—a careful look at our organization and at our methods. We try to determine if we are doing things in the most efficient and economic way. These periods, in other words, can and do constitute a test of management at all levels. They call for increased initiative and resourcefulness by all of us.

Sometimes, I think, there is a tendency for managers and supervisors, when confronted with a problem, to shrug their shoulders and pass it along to the man above, without doing their best to arrive at a solution. This is the military way. It is the ancient technique of keeping one's mouth shut, his digestion in good shape, and never volunteering. It is not, however, the best way to handle corporate problems.

The Company's management must, of course, determine policies and establish objectives. But these policies and objectives are not edicts put out by one man or one small group of men. They are decisions that grow out of information and recommendations received from all up and down the line. Frank Abrams, a former Standard Oil Company (N.J.) executive, used to say that when he went to work for Jersey Standard, he thought someone high up in a skyscraper office made all the important decisions. Mr. Abrams said that not until he worked his way up to become chairman of the board did he finally realize just how wrong he had been. He found that the important decisions really emanate from all up and down the organization line.

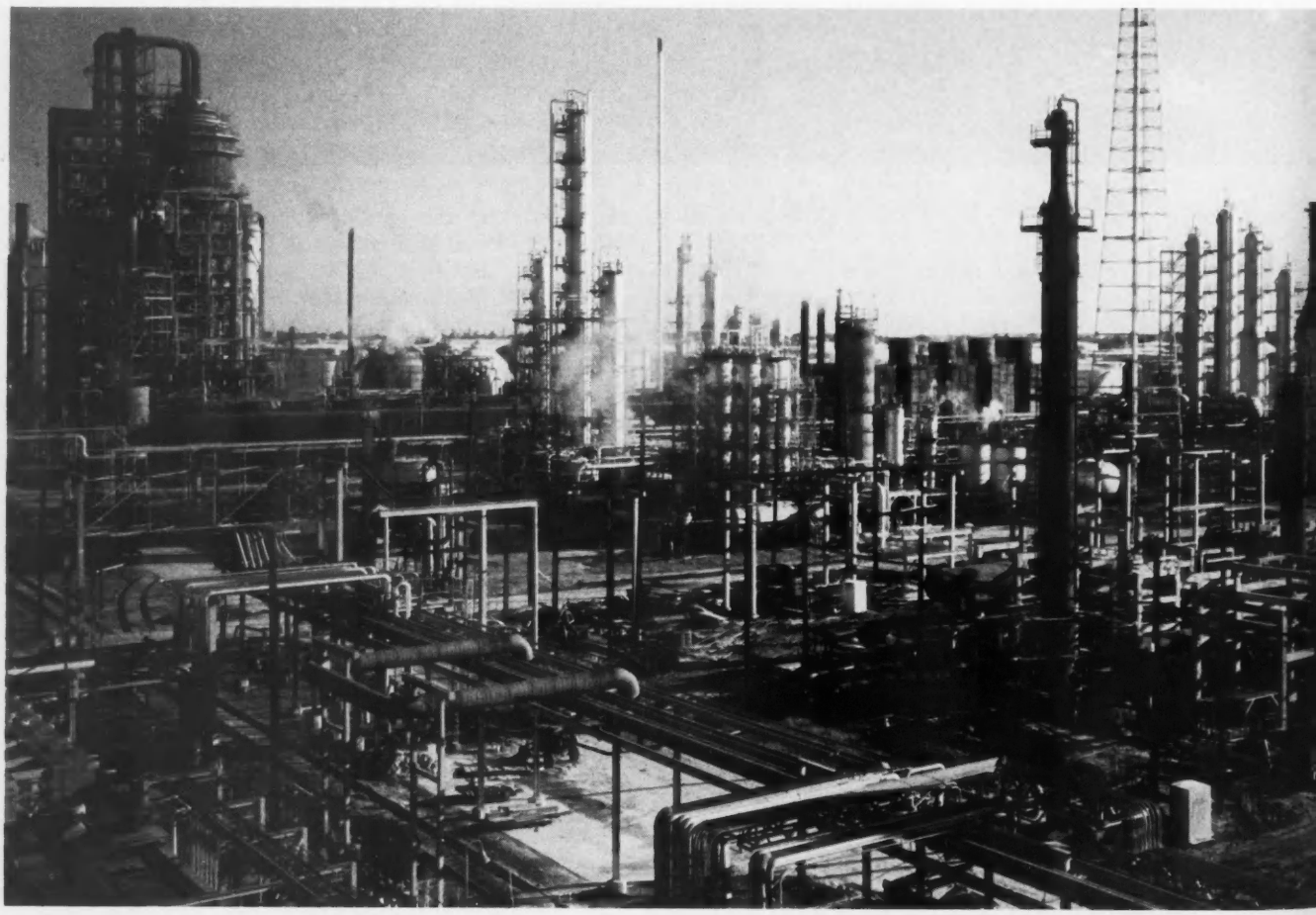
Every supervisor, then, whatever his place on the organization chart, has an important role to play in the decision-making process. He has the duty to express his opinions and thoughts as to what he considers to be in the best interests of the Company. This doesn't mean that, in the final analysis, we should not form a common front and support the policy eventually decided upon. It means that during formulation of plans there must be active participation, all up and down the management line, if the Company is to have the best information upon which to base its decisions.

We talk a great deal about the management team. Unless, however, we practice what we preach, all we have is a hierarchy with military overtones.

THE test of management to which we are now being subjected naturally includes an examination of our effectiveness in cost control. Consumers are becoming increasingly price conscious. As competition becomes keener, our own customers are beginning to act just as we do in buying a suit or a household appliance. They shop around for the best bargain. Our ability to provide quality products at a fair, competitive price will have a great deal to do with the future trend of our sales.

Since wages constitute one of our principal costs, particularly in the manufacturing end of the business, I want to conclude with a few comments on wage trends.

There are, I think, about three major points we should



keep in mind in any discussion of wages. One is that our employees have enjoyed an increasing real income as wages have advanced. Another is that the six per cent wage increases in 1956 and 1957 were, when added to other benefits, unusually large. And the third point is that increases in other industries which have long been behind us in pay are not a sound basis for another wage rise in 1958.

Traditionally, of course, straight time average rates for petroleum workers have been higher than the average rates in most other industries. Petroleum workers also enjoy higher average earnings because the industry has been able to maintain a 40-hour schedule. Many industries—the automobile industry is an example—are seasonal in nature. It is only during periods of peak production that they are able to maintain a 40-hour week. This, of course, lowers the average weekly earnings for employees of these industries.

Not only has Humble been able since World War II to maintain a 40-hour week, but it has also been able to maintain a much more stable work force than has been true for industry generally. At the same time, our hourly rates have been second only to those paid in the coal industry. And over a year's time, thanks to steady employment, the average weekly earnings of Humble people have been higher than those in all other industries, including coal.

Much attention has been focused of late on the cost of living. There has been a considerable rise in the Consumers' Price Index. From January of 1950 through October of last year, the Consumers' Price Index rose about 21 per cent. During this same period, however, Humble's wage index rose 45 per cent. Even after adjusting this figure for increased taxes and for dollar depreciation, our employees still have a higher purchasing power than ever before. In terms of ability to buy goods and services, even after taxes, the average Humble employee is 15 per cent better off today than he was in 1950—in spite of the sharp rise in the cost of living.

In addition, the Company is spending more than 34 cents on fringe benefits for every dollar it spends on work time payrolls.

WE READ a great deal about the forthcoming wage negotiations in the automobile industry. Of course, any wage increase that may be granted to such a large segment of workers—there are more than a million in the automobile industry—must inevitably have an impact on other industries. It will certainly have some inflationary effect. But this does not mean that a new "wage pattern" will necessarily develop.

Even if the automobile workers get the increases they are seeking, these will mainly be of a "catch up" nature. Their average straight time rate, for example, is currently 36 cents an hour below that of Humble. Therefore, any wage increase the automobile workers may get this year will merely tend to close the wage gap between the automobile industry and other leading industries.

I want to stress again that I am optimistic about the long-range outlook for our Company. The function of management is the meeting of problems, and I am confident that the problems now facing us will be met and solved just as we have met and solved other problems in the past. The quality of our solutions will determine just how successful our Company will be in tomorrow's keenly competitive economy.

In the final analysis, it is people who make up this Company and are its most important asset. It is people who constitute the most important factor in our future. The solutions to our problems must necessarily be based on the judgment of people. Let us, then, in the years ahead, exercise the utmost care in the selection of our people; let us see that they are properly trained; let us do our best to imbue them with the Humble philosophy.

If we can do these things, there is no reason why our Company should not prosper and grow, and why it should not continue to provide expanding opportunities.

"Our refining activities are growing in importance, especially in view of the long-range outlook for petrochemicals."

Construction scene at Baytown Refinery shows part of expansion program in which $80 million are being invested in a two-year period.

Roundup Time in Texas

Calling ranch headquarters from a pasture telephone.

IN the Texas cattle country—from Longhorn-and-Chisholm Trail-days to the present—roundup time has always been a vigorous and colorful spectacle. It is a time which brings into play all the skills, patience, and endurance a cowboy can muster—and he needs a full measure of all three.

Movies and Western novels tend to over-dramatize the roundup, perhaps. It is not invariably a time of headlong stampedes, of dashing rides to rescue heroines from slashing hooves, of miracles with the lasso, or pell-mell races between cowboys and frightened beasts, followed by romantic guitaring around the campfire.

Some of these may still be found, in small and realistic doses, on the roundup scene. But, by and large, roundup time is working time. Its end function is to get meat to market. In this lies the fundamental reason why the cowboy prefers

In modern ranching, moving cattle from place to place often brings mechanized equipment into service.

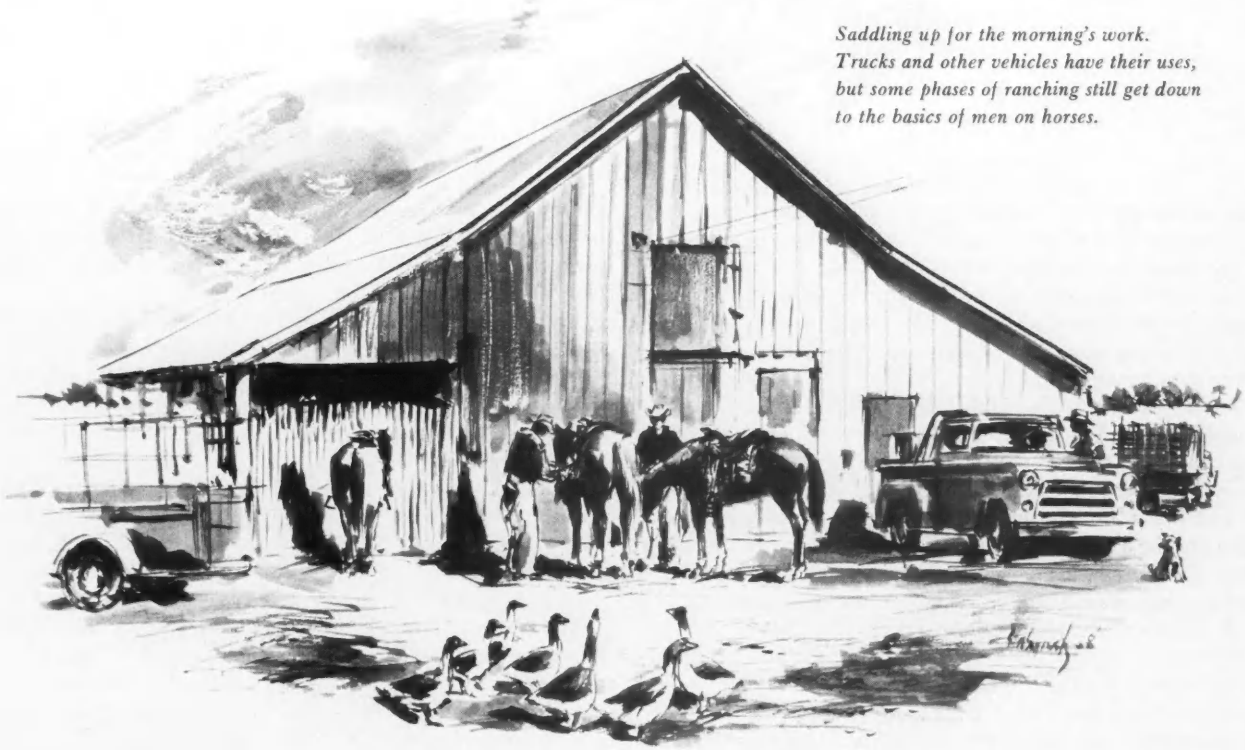
Trucks and machines have modernized ranch roundup, but working cowboys on horses still make it a vigorous, colorful spectacle

Dipping cattle in a vat near ranch headquarters.

not to chase cattle all over the range. It runs off valuable meat. And no cowboy worthy of the name would lay a rope violently on an animal unless he had to. Roping scares cattle, makes them wild, and harder to handle. In dealing with them, as with human beings, a little kindness goes a long way.

In brief, then, a cowboy's job at roundup time is similar in some respects to that of any businessman. His job is to gather cattle calmly and quickly and take inventory, without disturbing the animals. Then there's more work to be done—work of dipping and spraying; of treating sick and wounded stock; of cutting out from the herd those that need more fattening, or those to be groomed for showing or other purposes. But the end goal is to get beef to market in good order.

In the roundup, if at no other time, the cowboy proves his worth. There he has a chance to show he knows his business;



Saddling up for the morning's work. Trucks and other vehicles have their uses, but some phases of ranching still get down to the basics of men on horses.

Ranch hands take meals in the "cook shack."

Sketches by E. M. SCHIWETZ

Mending fences is part of ranch work to keep equipment in good shape.

that he is an efficient, sympathetic and keenly observant nurse to livestock—as well as one skilled in the saddle and the ways of the range. He can spot a troubled or ailing steer by looking at it. And he knows what to do when he finds one. In the application of these duties, he displays qualities far more useful than being quick on the draw, handy with his fists, and broke the morning after payday.

Unlike the cowboy and his basic qualities, which have remained almost unchanged through the years, the nature of the roundup itself has changed considerably, yielding in our time to modern machines and methods. Gone are the times of vast herds brought together across great unfenced ranges. Dim are the trails of the old cattle drives. Gone, for the most part, are the chuckwagons and sleeping under the stars . . . though on some ranches these customs are still preserved.

In most cases today, trucks and jeeps quicken the pace of the roundup and save wear and tear on men and livestock. It still comes, at some stage, to the point where men on horses perform traditional duties. But even so, the horses may have been hauled many miles by truck, saddled and ready to ride, before their work begins. And when the day's work is done, the mounts are likely to be ferried back to their stables at ranch headquarters while riders either bed down in the bunkhouse or rejoin their families in town.

And the nature of the cattle market itself has changed, just as the cattle sold there have changed. No longer does the rancher have to go hundreds of miles to the nearest railhead or stockyard. Besides the auction barn and the association sale, central markets may be no more than a few hours or a day or two away by truck and rail.

To bring the scenes of a fall roundup to readers of THE HUMBLE WAY, Artist E. M. Schiwetz visited one of the historic old ranches of Texas. This is the J. A. Matthews Ranch, near Albany. Rich in history, the ranch lies athwart the famous Clear Fork Country—so named for the Clear Fork of the Brazos River which flows across part of the ranch. Accompanying sketches by Schiwetz capture the flavor of the frontier and the wild beauty of the countryside that still prevail in scenes of mesquite-covered pastures and rock-ribbed creeks at the J. A. Matthews Ranch.

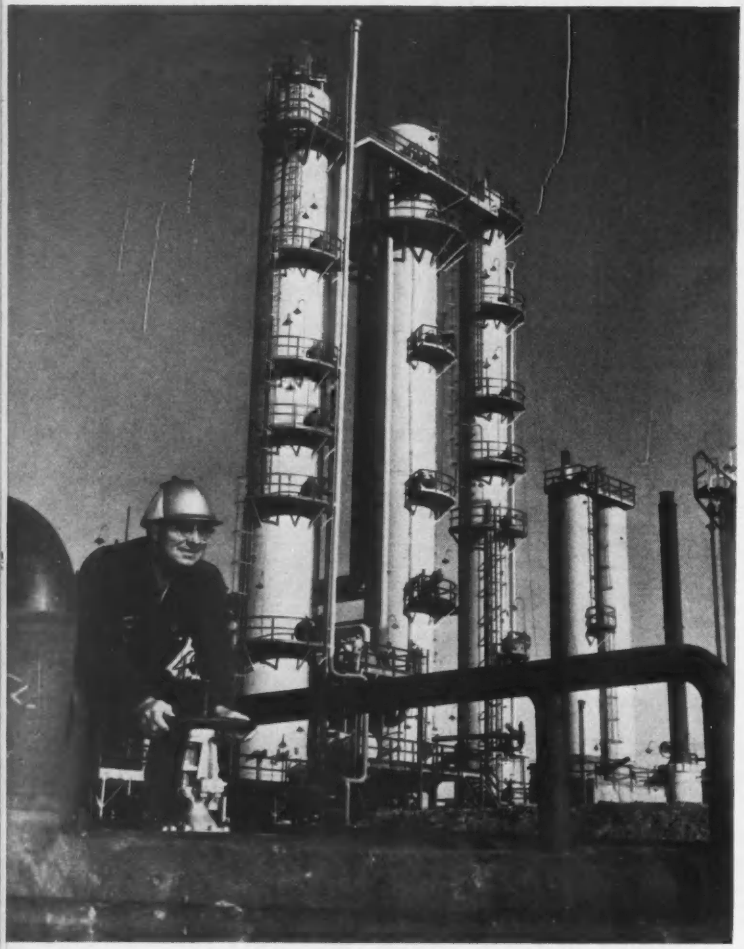
Entrance to headquarters, J. A. Matthews Ranch.

RANCH RICH IN HISTORY

THOSE who pioneered ranching activities at the J. A. Matthews Ranch first settled in Clear Fork Country almost a century ago. The ruins of that first establishment, the Old Stone Ranch, still stand in a pasture near Walnut Creek. At the time of the pioneers, no white settlements existed between the Old Stone Ranch and Santa Fe.

The ranch itself has further claims to a place in Texas history by having been the site of Camp Cooper, with its memories of Robert E. Lee and the famed Second Cavalry, whose job it was to protect the frontier from Indians during the middle 1850's. In those days, the ranch stood squarely in the stronghold of Comanche and Kiowa, and life itself was uncertain from day to day. Nearby, too, rose Old Fort Griffin, another link in the chain of frontier forts, but perhaps better known as a center for the trade in buffalo hides. During the fantastic slaughters of the 1870's, buffalo hides by the hundreds of thousands were stretched and stacked at Fort Griffin, awaiting shipment East.

Spraying cattle in a pasture enclosure.



Valve is opened to send trial run of feed stock through extractor, stripper, and rerun towers. Unit was tested first with water.

Humble steps up production of petrochemical raw materials as Baytown Refinery puts . . .

BENZENE

IT WAS a busy scene at Baytown Refinery last month as dozens of specialists swarmed over Humble's new Benzene Unit, readying it for its first breath of life.

Even as painters daubed the final touches of green to the plant's maze of pipes and towers, technicians gave the pumps, furnaces, instruments, flow lines, and other equipment a final careful check. On catwalks nine stories high, engineers tested the flow of water that swept through the giant extractor, stripper, and rerun towers.

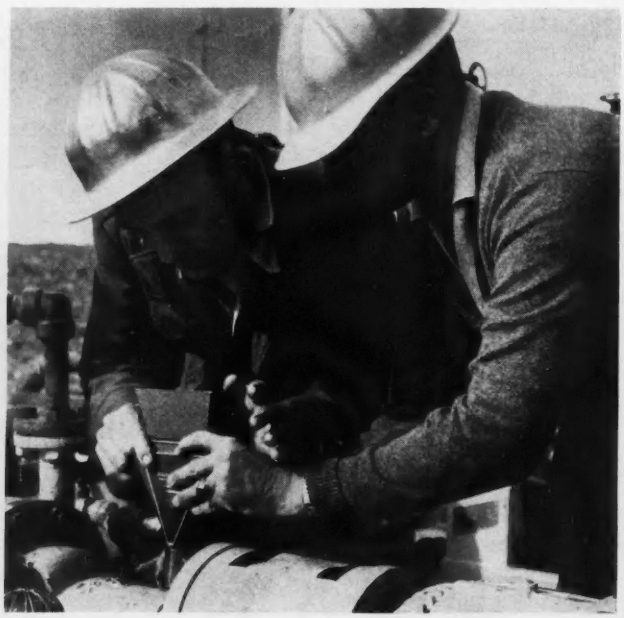
But at last, everything was ready. Valves were opened, pumps throbbed into action, and Humble's newest petrochemical plant was on stream.

Pouring out one end of the plant now are about 82,000 gallons of benzene a day—30,000,000 gallons a year. This great productive capacity makes it one of the largest such units in the world.

How does the unit work? How is benzene made? Basically it's a process of separation. Flowing into the plant is a feed stock composed of various gasoline fractions,

First furnace is fired up with torch. When temperature rises to specified point, distillation of benzene from solvent will begin.

Vibration meter is used to check mechanical condition of pump. Before unit goes into full operation, all equipment must be inspected.



Control room instrument panel indicating flow and condition of product throughout unit is carefully checked by operators.

E on Stream

including benzene. In the tall extractor tower, this liquid is mixed with a solvent, diethylene glycol, which dissolves the benzene but leaves the remainder of the stock untouched. Solvent plus benzene then are distilled to separate them.

Baytown-produced benzene has many destinations. By barge, tank car and truck it moves to manufacturers where it eventually finds its way into plastics, rubber, resins, nylon, detergents, insecticides, and many other modern synthetics. Benzene, as might be suspected, is one of the most versatile of petrochemical intermediates. From this colorless liquid are made a wide variety of other chemicals which in turn are used to make various modern synthetics.

The new Benzene Unit is more than just another plant in the Refinery skyline. It represents another big step in Humble's planned expansion in petrochemicals. It joins other units now completed, under construction, or still on the drawing boards that will increase the Company's stake in this rapidly expanding field.

First benzene extract produced in unit is tested for quality in chemical lab, located within confines of the Benzene Unit itself.

Benzene Unit on stream turns out about 82,000 gallons of benzene a day—30 million gallons a year. This great productive capacity makes it one of the largest such units in the world. Benzene made here will be used in the production of many synthetic products.

Look

REMEMBER when the mark of a good housekeeper was well-scrubbed and polished lamp chimneys? When grocers sealed the spout of your coal oil can with a raw potato? Or when you were jostled out of bed to milk by lantern light?

If you can recall these nostalgic scenes and duties that marked the era of lamp light and coal oil stoves, you probably lived during the golden age of kerosene.

Those years are history now, of course. But kerosene itself, that versatile liquid which first provided safe, economical light and fuel for the masses, has remained with us. And it's still going strong!

Just look at production figures during the past 40 years. In 1916, refiners in the United States turned out about 34 million barrels of kerosene. Twenty years later—long after electricity was lighting up the dark in most American homes—kerosene production zoomed to 56 million barrels annually. Today, more than 100 million barrels are being refined each year in the U. S. Humble alone produces more than

ook what's happened to

KEROSENE

Although the lamp light era is past, this early-day illuminant is still going strong, finding new uses in industry, agriculture

20,000 barrels per day at Baytown Refinery.

There are good reasons why kerosene has continued through the years to play a starring role on the world's fuel stage. It is still one of the most widely distributed of petroleum products and all over the world is fueling millions of lamps, heaters, cooking stoves and other domestic appliances.

Kerosene is still an essential of farm life in many countries. Besides giving light and heat, it is warming chicken incubators, burning off prickly pear spines, killing rangeland brush, curing tobacco, fueling machinery.

It also is serving humanity today in a number of versatile new ways. Highly refined versions of kerosene are being used as dry cleaning fluid. It helps fly giant jet airplanes over the Arctic Circle, powers batteryless transistor radio sets in The Netherlands, cools refrigerators in Africa.

Although other petroleum products share the energy load today, old man kerosene is still spry and from all counts actually appears to be gaining strength each year. Future jet aircraft needs alone may significantly increase present-day output.

But what is kerosene? Anyone who has swallowed a tablespoonful of it mixed with sugar as an early-day cough remedy truly might wonder. Basically, it's the same today as always—a light, colorless oil, obtained by boiling crude and condensing certain vapors. It answers to several names—coal oil, carbon oil. In Great Britain it is called paraffin oil or American paraffin oil.

The job of converting crude into kerosene which will burn with a steady, bright, odorless flame calls for a meticulous, skillful refining technique. This differs considerably from early-day "batch" production in Pennsylvania when kerosene refining was an individual, personalized art, rather than a continuous, mass production operation. As it was being refined in the 1860's, the kerosene surged through a small glass-covered "look box" where it could be seen in action. Like a French chef watching a pressure cooker, a specialist noted the color and consistency of the fluid and could tell from long experience when his oily broth was done.

At Humble's Baytown Refinery today the operation centers around big pipe stills, which distill up to 75,000 barrels per day of crude oil. In these units, the crude is boiled and various fractions, called distillates, are taken off. The very light material, which comes off first overhead, is gas. Next comes naphtha distillate, from which gasoline is made. Then comes kerosene . . . and so on, down to the very heaviest parts of the crude.

But kerosene thus obtained is not yet ready for lamps or jet engines. First, it must move to other refining units for treatment to remove objectionable materials which produce unpleasant odors and poor burning qualities.

At the end of the line—when the refinery chefs have cooked their broth to perfection—a clear fluid emerges. Dip your fingers in it and you'll see that it's almost like water, only slightly oily. It burns with a steady flame.

The story of kerosene's discovery and development began even before the birth of the petroleum industry.

Up until 1847 oil dipped from Pennsylvania seeps, creeks, and salt wells was used only in small quantities for medicinal purposes. Samuel M. Kier of Pittsburgh was bottling and selling the evil-tasting fluid as a general cure-all through agents who traveled over the countryside hawking their wares. But despite advertising which plugged *Kier's Rock Oil* as a "helpful balm from Nature's secret spring," Kier's supply of oil exceeded his demand for medicine.

He quickly concluded, like all good businessmen, that it would be a fine thing indeed if he could develop a new use and market for his product.

After consulting with a prominent Philadelphia chemist in 1850, Kier became convinced that he could distill the oil to obtain an excellent illuminant. He soon built a one-barrel still in Pittsburgh and began to produce a light oil, known today as kerosene.

The price jumped to $2 a gallon and soon the supply of petroleum was unable to match demand. But Colonel Drake and his famous well at Titusville in 1859 solved this problem. Great quantities of petroleum became available, and kerosene—the industry's first big commercial product—quickly rose in popularity.

To increase sales, American refiners soon expanded to other countries. In 1890, bulk agents sold to Chinese peasants a sturdy, inexpensive kerosene lamp complete with tin bowl and glass chimney. The Chinese called it "Mei Foo," or "beautiful companion."

Kerosene was penetrating every place "that wheels could roll or a camel could put its hoof." Even the tin can containers it came in were highly valued—and still are, in some parts of the world.

About this time one admirer threw out this kudos: "I may claim that kerosene has carried more cheap comfort into more poor homes than almost any discovery of modern times."

Kerosene was the petroleum industry's bread and butter at the turn of the century, although gasoline, lubricants and other minor products also were refined and distributed. But suddenly two developments changed the picture materially.

First, Edison's electric light bulbs were gradually replacing kerosene lamps as America's favorite light source. Second, the horseless carriage created a huge new market for gasoline, a product which was generally discarded in the early years as an explosive pest.

In 1911, for the first time, more gasoline was sold than kerosene in the United States. Kerosene was no longer king, but it has remained to earn for itself a respected place in the family of fuels.

KEROSENE and the JET AGE

SOMEDAY soon you may board a plane at New York City, lean back comfortably in your seat and watch through a window as the sleek jet airliner streaks down the runway, lifts effortlessly into the air, and climbs through a cloud bank on its way to the West Coast.

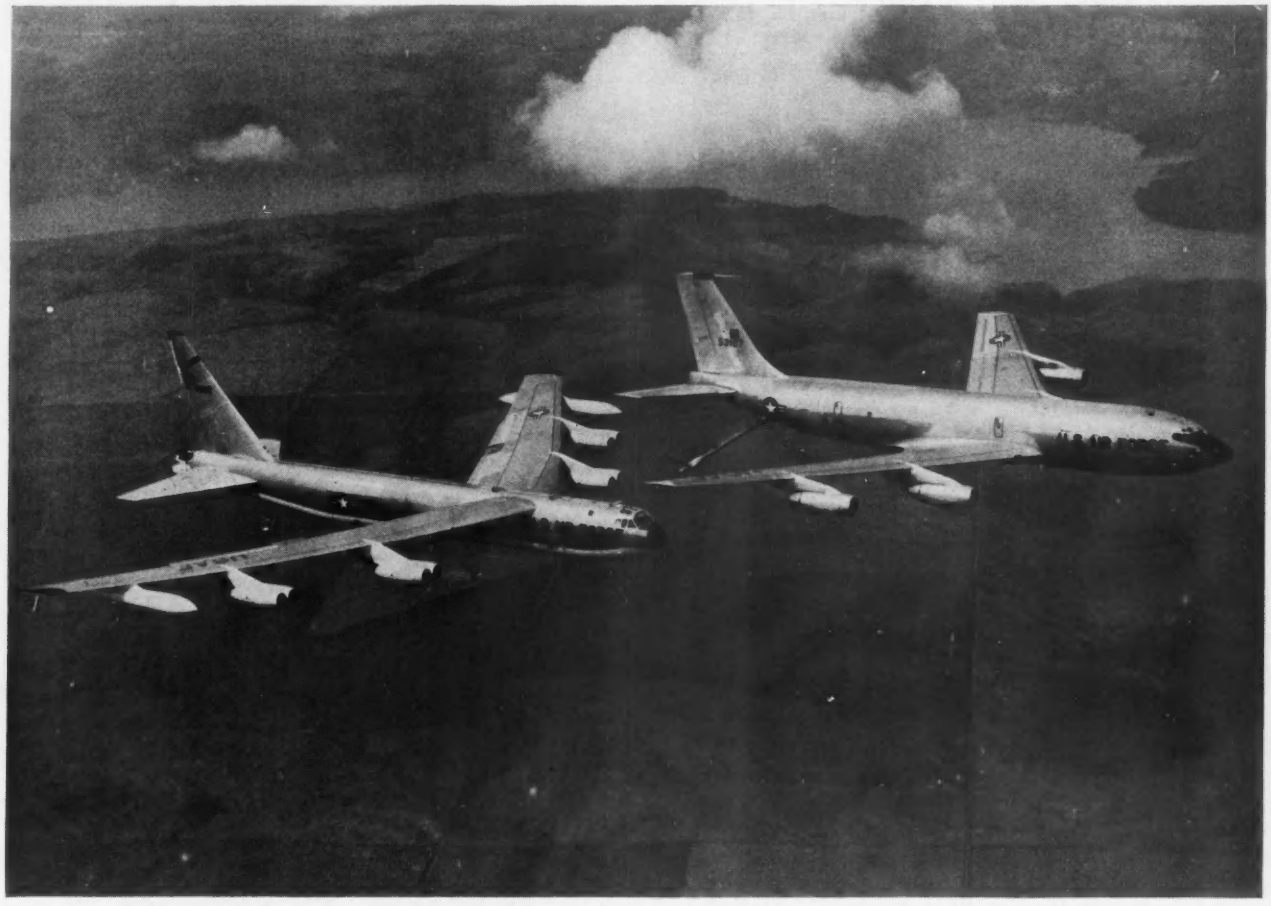
In six minutes you are sipping coffee at 10,000 feet. In 28 minutes you are at 31,000 feet moving at more than 600 miles per hour through the —52 degree air outside. Your trip is smooth, hushed, and so comfortable it's easy to fall asleep.

A slight lurch awakens you four and a half hours later as the plane touches down on the Los Angeles International Airport runway, thus completing your first transcontinental jet aircraft flight.

Wishful thinking? Not at all, for you are living in the early years of the modern jet era, an era in which old-time kerosene will play a vital role.

Jets and kerosene go together like race horses and oats. Big commercial airliners scheduled for delivery next year have an insatiable thirst for this early-day illuminant, gulping up to 2,400 gallons an hour while in flight. Even idling on the runway, they burn 700 gallons an hour.

There are two basic types of jet aircraft which you may board on commercial flights late next year or in 1960 —the turbo jet and the turbo propeller



Jet airplanes are big users of kerosene today, although military models use JP-4 type fuel which is a gasoline-kerosene mixture. The Air Force's KC-135, here refueling a B-52 Stratofortress, is similar to commercial airliners scheduled to go into operation next year.

jet. The turbo or "pure jet" flies from the jet action of the engine alone. The turbo prop uses the jet blast to spin a propeller.

Both models are big—up to 295,000 pounds of takeoff weight, 50 per cent of which will be fuel. Compare this with today's Super-Constellation weight of 156,000 pounds. Jets also are roomy and fast. They will haul from 120 to 150 passengers at around 600 miles per hour at altitudes of 30,000 feet or higher. It is reported that a single large jet will have about the same yearly trans-Atlantic passenger-carrying capacity as a 40,000-ton ocean liner such as the *Ile de France*.

Despite increased fuel costs and staggering initial investments, it is hoped that these giant planes will fit handily into the picture of increased air travel which is expected to double in the next 10 years.

Most of the world's airlines are staking their economic futures on these new models. Between now and 1963 they are expected to buy from $3½ to $4 billion worth of them. One U. S. airline alone has 63 jets on order.

The United States military, biggest consumer of aircraft fuels, took its last big piston plane last year. Commercial airlines will receive their last ones this year. From then on, jets—more than likely kerosene-powered—will rule the skies.

"And," as one airline official says, "with jet transports on the world's air routes, the world will, in effect, become 40 per cent smaller."

But kerosene doesn't yet have an exclusive inside track on jet fuel needs. In fact, at present, most jet fuel is the JP-4 type which is about 70 per cent gasoline and 30 per cent kerosene. Most of today's jet fuel is absorbed by the military which prefers JP-4 because of its current high availability. However, commercial airlines now entering the picture may prefer all kerosene. Also, when supersonic planes of the future arrive, kerosene may be a choice because of its lower volatility.

Other relative factors between the two fuels involve BTU content, freezing point, aromatics content, sulfur specifications, thermal stability, storage and handling.

Today's thinking on jet fuel differs considerably from the day when the jet plane was in its infancy. It was generally stated then that any fuel from "coal dust to candle ends" would perform satisfactorily and economic factors alone would settle the issue.

Whatever the outcome of the fuel question, one thing is certain. Kerosene is a good bet to become firmly entrenched in the jet era. This conclusion is bolstered by the fact that missiles probably will use kerosene-type fuels for their first stage propulsion.

Everywhere on the jet scene today, kerosene shows signs of great, new versatility—undreamed of when it first lighted the lamps in America's homes a century ago.

News Notes

W. E. Dougherty New Chief Geologist

Dougherty

Wendlandt

William E. Dougherty has been named chief geologist for Humble Oil & Refining Company, replacing Edward A. Wendlandt, who retired January 30 after 33 years' service.

Mr. Wendlandt began his career with Humble in 1924, soon after graduating from the University of Texas. His first position was as a field geologist in the Gulf Coast Division. Later he served in various other divisions, and in 1936 became assistant division geologist in East Texas. Five years later, he was named head of the East Texas Division staff.

From 1950 to 1952, Mr. Wendlandt was temporarily assigned as the Company's assistant chief geologist, returning to his post with the East Texas Division in the latter year. In 1955, he was called back to Houston as chief geologist.

Mr. Dougherty, 44, joined Humble in 1936 as a geologist at Midland after graduating from the University of Texas. He was promoted to assistant West Texas division geologist at Midland in 1941.

During World War II, he served as a field artillery officer, emerging as a captain in 1946. Returning to his pre-war assignment, Mr. Dougherty remained at Midland until 1948, when he was transferred to Corpus Christi as assistant division geologist for Southwest Texas. Later that year, he became division geologist in that area. In 1952 he moved back to Midland as division geologist, remaining there until his move to Houston in June, 1956, to become assistant chief geologist.

Dr. Shaffer Honored by API

Dr. Sherman S. Shaffer, staff associate in the Technical and Research Divisions at Baytown Refinery, was awarded a certificate of appreciation by the American Petroleum Institute at a meeting recently in Chicago.

The certificate cited Dr. Shaffer for distinguished service as a member of the Advisory Committee on Fundamental Research on Composition and Properties of Petroleum; as a member of ACFRCPP's Executive Committee; and as a member and chairman of the Advisory Committee for Analysis, Purification, and Properties of Petroleum Hydrocarbons.

Aviation Department Established

A new Humble Aviation Department has been established, effective January 1, 1958, as a successor organization to the Aviation Transportation Division of the Production Department.

C. M. Scholes is Manager of the Department, C. M. Sparks is Superintendent of Flight Operations, and J. H. Taylor, Superintendent of Aviation Maintenance.

The new department will operate under the general direction of C. E. Reistle, Jr., Executive Vice President.

Gas Employees Win Safety Award

The National Safety Council has presented its highest group award, the Award of Honor, to 777 employees of Humble's natural gas operations and gas engineering.

The award represents the best accident-free record ever recorded in the natural gas phase of the petroleum industry.

Rommel Schilthuis Davis

The group amassed a total of 3,242,156 hours of work without a disabling injury between May 27, 1955, and July 24, 1957.

Employees involved are from gas plants, gas system installations and the gas engineering division of Humble's Production Department.

Above, Humble President Morgan J. Davis presents the Award of Honor to Vice President Ralph J. Schilthuis, who accepts for the natural gas employees. Chief Safety Engineer Ross Rommel looks on.

Pipe Line Employees Set New Safety Mark

Humble Pipe Line Company employees set a new safety record recently, completing two million man hours of work without a disabling injury.

This accomplishment covers the period April 22, 1957, to November 7, 1957. It represents the continuous efforts of approximately 1,985 employees to maintain an accident-free record for 199 days.

Although the Pipe Line Company has accomplished one million accident-free hours on five previous occasions, this establishes a record for two million hours.

Humble Produces Film on Texas Parks

A 28-minute color film highlighting the Texas state parks system was formally presented to the Parks Board in December by Humble Oil & Refining Company.

The film will be loaned to schools, civic clubs and similar groups interested in parks, recreation and Texas history on application to the Parks Board, Capitol Station, Austin.

It was produced by Humble as part of its *Texas in Review* television program.

Recreational facilities are pictured at Corpus Christi, Inks Lake, Brownwood, Daingerfield, Bastrop and other parks. Historical locations shown include the Palo Duro Canyon, Longhorn Cavern, Fort Davis, the Alamo and San Jose Missions, and the San Jacinto Battleground.

Humble Employees Receive OIC Appointments

Four employees have been appointed to key posts in the Texas and New Mexico oil industry's public information and service program for 1958.

L. H. Byrd of Midland, assistant division superintendent in the Production Department, will direct the oil industry's public information and service program in 24 West Texas counties. S. Howard Lee, district sales manager in Corpus Christi, will do the same job in the Lower Gulf Coast Area, comprising 12 counties. Both of these men held the same appointments during 1957.

Russell Lilly of Farmington, N. M., district superintendent in the Production Department, has been appointed Area Oil Information Committee chairman and will direct the industry's program in northwestern New Mexico.

H. T. Cothern, merchandising assistant in Albuquerque, has been named New Mexico state vice chairman for community programs.

As area OIC chairmen, Messrs. Byrd, Lee and Lilly will work directly with other oil men and women in the communities of their areas to provide oil industry films, to schedule speakers, and to arrange demonstrations before clubs and civic organizations. They will also coordinate the efforts of local committeemen in carrying out the important OIC school program, wherein specially prepared educational materials dealing with the oil industry are made available to teachers and students in junior and senior high schools.

The nationwide work of the Oil Information Committee is the continuing public relations program of the American Petroleum Institute.

Ward, Stephens Receive API Awards

Ward

Stephens

Two Humble employees have received national awards for "distinguished leadership and accomplishments" in the 1957 public information and service program sponsored by the American Petroleum Institute.

Gold Awards for "outstanding service" to the oil industry were presented to Harold D. Ward, employee relations manager for the Houston Office, and Roy M. Stephens, assistant sales manager.

The Humble representatives were among 10 Texas oil men and one New Mexico oil woman to receive the Oil Information Committee's highest awards.

Forty Years With Humble

Gustaf M. Borgstrom, marketing assistant in the Sales Department, completed 40 years of service with Humble on January 12.

Frank R. Springer, credit manager in Sales Accounting completed 40 years of service on January 2.

Recent Retirements

PRODUCTION DEPARTMENT

Name	Location	Date of Retirement	Years of Service
Le Roy Brewer	Talco District	November 18	29
William R. Choate, Sr.	Tomball	January 29	29
John R. Goddard	Flour Bluff	January 8	38
Benjamin F. Grice	Imogene	January 16	32
Dustin L. Johnson	Gladewater	February 5	34
John J. Moore	Vernon	January 15	32
Theodore L. Roach	Hardin	January 29	36
Harry L. Seburn	Athens District	December 1	31

BAYTOWN REFINERY

William O. Cannon	Cracking & Polymerization Dept.	December 1	32
Elton D. Casey	Pipe Department	February 1	23
Spurgeon Coyle	Electrical Dept.	February 1	30
Ernest Fisher	Pipe Department	January 23	36
James F. Holder	Distillation	February 1	32
Martin Lavergne	Pipe Department	February 2	30
Lee Patton	Boilermaker's Dept.	February 1	37

HOUSTON OFFICE

Claude Baker	Tires, Batteries & Accessories	February 3	33
Mary C. Fastenrath	Office Buildings	February 1	28
Thomas F. Flynn	Traffic Bureau	January 8	33
Charles M. Hunter	Sales Operations & Engineering	January 11	30
Willie Belle Laird	General Sales Div.	January 4	32
Fred C. Meinscher, Sr.	Sales Accounting	January 2	33
Ivy B. Schorm	Office Buildings	February 1	22
James A. Tomlinson	Civil Engineering	January 24	37
Edward A. Wendlandt	Exploration, Geologic	January 30	33

Deaths

Employees: Edward W. Balcar, 56, boilermaker first at Baytown Refinery, on December 15; Timothy W. Burr, 19, file clerk in Land Records and Rentals in the Houston Office, on November 21; Archie F. Deavers, 35, engineman L.S.T. at Grand Isle, on November 5; Robert F. Dial, Jr., 35, gangpusher at Baytown Refinery, on November 26; Julian N. Dishongh, 54, accountant in the Refining Department in the Houston Office, on November 20.

Elden E. E. Gillow, 48, construction foreman at Odessa District, on December 16; William J. Merritt, 59, compressor plant operator and gauger at Port Sulphur, Louisiana, on December 3; Forrest C. Ogilvie, 64, machinist at Baytown Refinery, on December 9; Mayo L. Theriot, 48, machinist at Baytown Refinery, on November 16.

Annuitants: Horace W. Bishop, 78, former buyer in Division B in the Purchasing Department, on December 8; Ivan C. Corbell, 55, former gas plant superintendent, at Flour Bluff, on November 29; John L. Foster, Sr., 58, former lease pumper-gauger at Flour Bluff District, on November 30; Joseph L. Lirette, 74, former guard at Baytown Refinery, on December 15.

William L. Mueller, 72, former pipeliner at Webster Station, on December 6; Thomas S. Reed, 79, former guard at Baytown Refinery, on October 29; Bill Sisk, 61, former rotary driller at Friendswood, on November 6; Charles B. Tankersley, 70, former oiler at Pendell Station, on December 16.

Samuel R. Walker, Sr., 76, former carpenter gangpusher at Lovell Lake, on November 16; George S. White, 63, former district gauger at Friendswood, on December 8; Paul R. Williams, 71, former chief engineer at Navasota Station, on November 15.

By the way

● Ranching and roundups have changed since the days of the Chisholm Trail. Writer Frank Fields and Artist E. M. (Buck) Schiwetz began to find that out as soon as they landed at Abilene last fall, bound for the J. A. Matthews Ranch, near Albany (see pages 8-11).

Were they met by a buckboard and escorted by hard-riding cowboys? No. There to greet them was Watt Matthews himself, driving a late-model car. After a smooth ride over good roads to the ranch, the guests "turned in" for the night—not rolled in a blanket under the stars, but in comfortable ranchhouse beds. Only the cry of a coyote reminded them of a surrounding wilderness.

And coffee in the morning? Not boiled in a can over a chuckwagon fire, but served with savory bacon and eggs in a low stone building bearing the simple and undeserved label of "cook shack." Not a shack at all, it proved to be a clean and spacious dining room where the cook served tasty, man-sized meals from a modern steam table.

Only when they got out into the mesquite brush, where cowboys were rounding up the herd, did the two visitors get a closer look at ranch life as it used to be. Here, the cowboys—by action and appearance—looked as if they might have stepped out of a painting by Russell or Remington.

● How good is your sniffer? If you're average, you can smell a hot apple pie at 50 feet perhaps, or maybe gasoline for a block. But however sensitive your nose may be, it can't compare with a chemical sniffer now in use at Humble's new Benzene Unit (see pages 12-13).

Quickly and accurately, this instrument can detect five parts of benzene in one million parts of air. This is roughly 15 times better than any human can do.

How does it work? A rubber bulb first is squeezed to suck in a sample of air. This sample then is drawn over a layer of sugar-like chemicals. Color change of these chemicals indicates the presence of benzene. The darker the chemicals, the greater the benzene concentration.

This instrument is particularly useful at the Benzene Unit, in that benzene—along with gasoline and other aromatics—has the ability to deaden temporarily one's sense of smell.

Humble's industrial hygienists regularly check the new unit with the sniffer, always on guard against possible exposure.

● As pointed out in the story on pages 14-17, kerosene has enjoyed fame through the years not only as an illuminant, but also as a home medical remedy. In fact, while our staff writer was researching the article, he encountered several once-popular "kerosene cures."

On many Southern plantations during the 1800's, for example, a

tangled mat of spider webs mixed carefully with a few drops of kerosene, was an accepted poultice for sores and cuts.

Many readers of this magazine can remember when mustard-and-kerosene plasters were commonly used as a blistering but somewhat effective relief for chest colds. Some of these readers may still use kerosene soakings for cuts and puncture wounds. At least one man believes that kerosene rubbed briskly into the soles of the feet quickly counteracts the ache.

But perhaps the greatest remedial fame enjoyed by kerosene came from its happy union with sugar as treatment for the croup. This evil tasting mixture is reported to have effected spontaneous cures—no doubt from fear of a second dosage.

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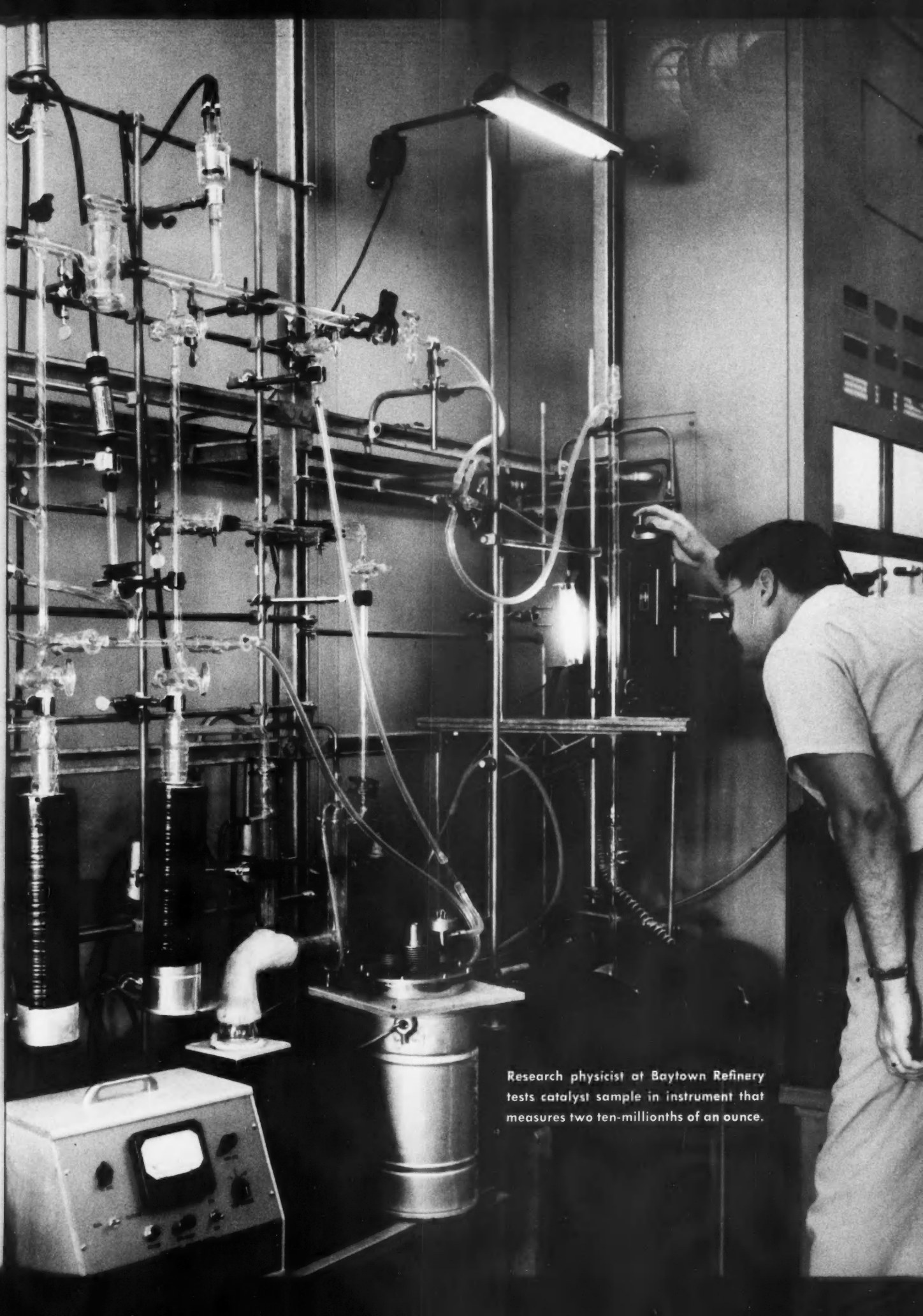

Research physicist at Baytown Refinery tests catalyst sample in instrument that measures two ten-millionths of an ounce.